

WHAT IS CLAIMED IS:

1 1. A method of time scale modification of a digital
 2 audio signal comprising the steps of:
 3 analyzing an input signal in a set of first equally
 4 spaced, overlapping time windows having a first overlap amount
 5 S_a ;
 6 selecting a base overlap S_s for output synthesis
 7 corresponding to a desired time scale modification;
 8 calculating a cross-correlation $R[k]$ for index value k
 9 between overlapping frames for a range of overlaps between
 10 $S_s + k_{\min}$ to $S_s + k_{\max}$ for a fixed length overlap region;
 11 selecting a value K yielding the greatest cross-
 12 correlation value $R[k]$;
 13 synthesizing an output signal in a set of second equally
 14 spaced, overlapping time windows having a second overlap
 15 amount equal to $S_s + K$.

1 2. The method of claim 1, wherein:
 2 said step of calculating the cross-correlation $R[k]$
 3 employs the equation

$$5 \quad R[k] = \sum_{i=\text{initial}_x}^{\text{final}_x} \text{sign}\{y[mS_s + i + k]\} \cdot \text{sign}\{x[mS_a + i]\}.$$

1 3. The method of claim 1, wherein:
 2 said step of calculating the cross-correlation $R[k]$
 3 employs only a center half of the overlap region for $k = 0$.

1 4. A digital audio apparatus comprising:
 2 a source of a digital audio signal;
 3 a digital signal processor connected to said source of a
 4 digital audio signal programmed to perform time scale
 5 modification on the digital audio signal by
 6 analyzing an input signal in a set of first equally
 7 spaced, overlapping time windows having a first overlap
 8 amount,
 9 selecting a base overlap S_s for output synthesis
 10 corresponding to a desired time scale modification,
 11 calculating a cross-correlation $R[k]$ for index value
 12 k between overlapping frames for a range of overlaps
 13 between $S_s + k_{\min}$ to $S_s + k_{\max}$ for a fixed length overlap
 14 region;
 15 selecting a value K yielding the greatest cross-
 16 correlation value $R[k]$,
 17 synthesizing an output signal in a set of second
 18 equally spaced, overlapping time windows having a second
 19 overlap amount equal to $S_s + K$; and
 20 an output device connected to the digital signal
 21 processor for outputting the time scale modified digital audio
 22 signal.

1 5. The digital audio apparatus of claim 4, wherein:
 2 said digital signal processor is programmed to calculate
 3 the cross-correlation $R[k]$ employs the equation
 4

$$5 \quad R[k] = \sum_{i=\text{initial}_x}^{\text{final}_x} \text{sign}\{y[mS_s + i + k]\} \cdot \text{sign}\{x[mS_s + i]\}.$$

1 6. The digital audio apparatus of claim 4, wherein:
2 said digital signal processor is programmed to calculate
3 the cross-correlation $R[k]$ employing only a center half of the
4 overlap region for $k = 0$.